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ABSTRACT

This book seeks to improve the way science is taught in the elementary school. It suggests that there are three main contradictions that make it difficult for teachers and students to engage in meaningful activities from which understandings result. The central issues in this book are framed in terms of three dichotomies that lead to tensions arising from the dialectic of opposing aspects of teaching and learning. First, there is a tension between learning as an individual process (cultural production) and as a cultural process (cultural reproduction). Second, there is a tension between science and technology (applied science). Finally, there exists a tension between children's interaction with nature and their language for describing and explaining nature. Exemplary case studies are featured that show the capabilities of elementary students to talk about technology and, in the process, learn to talk science. These case studies are couched in an ongoing professional dialogue and the requirements to make such exemplary science happen in classrooms. Chapters include: (1) "Introduction"; (2) "Learning Science through Design Activities"; (3) "Arguing Engineering Designs in Whole-Class Settings"; (4) "Thinking with Hands, Eyes, Ears, and Signs"; (5) "Learn as You Build: Integrating Science in Innovative Design"; (6) "Learning Science in Design Communities"; (7) "Castles, Castles, Castles: And Where Is the Science"; (8) "Learning To Teach Science as Inquiry"; and (9) "Concluding Metalogues." (MM)

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